January 13, 1859.

SIR BENJAMIN C. BRODIE, Bart., President, in the Chair.

I. "On the Embryogeny of *Comatula Rosacea* (Linck)." By WYVILLE THOMSON, Esq., Professor of Geology in Queen's College, Belfast. Communicated by Dr. CARPENTER. Received December 7, 1858.

(Abstract.)

The author briefly described the male and female reproductive organs of Comatula. When the ova are mature, and before impregnation, they are protruded and remain hanging from the ovarian orifice, entangled in the areolar tissue of the everted ovary. In this position impregnation appears usually to take place.

After segmentation of the yelk, a solid nucleus is formed in the centre of the mulberry yelk-mass. This nucleus becomes invested in a special membrane, and into this embryonic mass the remainder of the yelk is gradually absorbed. Ciliary motion is observed at various points on the surface of the inclosed embryo, which finally assumes its characteristic form. The young larva, on escaping from the egg, consists of a homogeneous mass of pale-yellow granular matter, with scattered nuclei, cells, and oil-globules. It is barrel-shaped, and girded at intervals with about five broad ciliated bands.

As development proceeds, one of these belts becomes depressed at a certain point; and within the loop thus formed, an inversion of the integument indicates the position of the rudimentary mouth.

A distinct œsophagus and stomach are rapidly differentiated, and a short intestine, ending in a large anal orifice, near the posterior extremity of the animal. The larva at the same time becomes lengthened and vermiform; the girding ciliated bands resolve themselves into a single transverse band, encircling the body near the anterior extremity, and a band passing below the mouth and longitudinally down either side to the tail.

Large lobulated masses of fine granular tissue occupy the cavity of the body on either side of the alimentary canal.

The echinoderm-zooid originates, apparently, beneath the integument of the larva, but perhaps in an inversion of that integument,

in the form of a rosette of cells encysted near the upper extremity of the intestine. The rosette is at first single, but shortly takes the appearance of a double ring, the rings being united by a curved tube. These rings seem to represent the rudiments of the ambulacral vascular system of the echinoderm, and the curved tube the origin of the alimentary canal. A dense coating of granular areolar tissue is formed round the young crinoid, obscuring the further development of the internal organs. The mode of its disengagement from the larva was not observed.

Free from the locomotive larva, the echinoderm in its earliest stage is a motionless, white, egg-like body, covered externally with a thick transparent layer, which is traversed vertically by scattered fusiform oil-cells.

Beneath this layer are seen rapidly-forming patches of the calcified areolar tissue so characteristic of the class. The body becomes club-shaped; the narrow end attaches itself by cement-matter to some foreign substance, and a head and stem are distinguished.

Two corresponding rows of five plates each (the *basalia*, and the first row of the *interradialia*) form a calcareous chalice round the base of the head. Rudimentary arms now first make their appearance, and the development of the attached pentacrinal form proceeds steadily.

From his observations of several broods during the spring of 1858, the author was led to believe that, under circumstances favourable to the production of the pentacrinal stage, the development of the larva may be arrested in any of its earlier stages, and before the complete differentiation of its internal organs. It is hoped that the observations of another season may solve this and other questions which still remain somewhat obscure.

II. "On the Stratifications in Electrical Discharges, as observed in Torricellian and other Vacua."—Second Communication. By J. P. Gassiot, Esq., V.P.R.S.

(Abstract.)

The author of this Paper states that he procured several vacuum-tubes from M. Geissler of Bonn, and alludes to the experiments